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# SCIENCE.

FRIDAY, MARCH 19, 1886.

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## COMMENT AND CRITICISM.

‘THE GEOLOGY of the Pittsburgh coal-region’ is the title of an interesting paper, recently published, by Professor Lesley. The amount of coal in the Pittsburgh region is estimated at about thirty billion tons, — an amount practically inexhaustible, at least for centuries. During 1884, eleven million tons were taken from the Pittsburgh bed, — an output of about sixty per cent of the whole bituminous coal-production of the state, and about thirty-three per cent of the shipments of anthracite. Concerning oil and gas, however, the author has very different views. He says, “I take the opportunity to express my opinion in the strongest terms, that the amazing exhibition of oil and gas which has characterized the last twenty years, and will probably characterize the next ten or twenty years, is nevertheless, not only geologically but historically, a temporary and vanishing phenomenon — one which young men will live to see come to its natural end. And this opinion I do not entertain in any loose or unreasonable form; it is the result of both an active and a thoughtful acquaintance with the subject.”

THE CORNELL UNIVERSITY REGISTER for 1885-86, which has just appeared, shows an institution in a high state of efficiency. There are upwards of 60 professors, assistants, instructors, and similar officers, and 638 students. Of this number, 604 are undergraduates; and the marked difference in numbers between the upper and lower classes may be taken as evidence of the rapidly increasing popularity and efficiency of the university. As against 84 seniors and 97 juniors, there are 162 sophomores and 239 freshmen. The former figures are those of Amherst, Williams, and Brown, while the latter are not far away from those of Harvard. That this magnificent increase is due to a liberal policy and the judicious use of a large endowment, cannot for a moment be doubted; but it seems strange to find in this great university so important a department as that of political economy represented by an associate professor only, and the whole instruction in philosophy

devolving upon one man. We are aware that Professor Schumann has been called to this department at Cornell, and will begin his work next autumn; but at that time Professor Wilson will, we understand, retire from active duty, and philosophy will yet have but a single representative. The rapidly widening provinces of psychology and ethics have long since made it impossible for a man who must also teach the history of philosophy and logic to keep up with their progress; and it is strange that so few of our great colleges seem to recognize this fact. Harvard and Princeton seem to us the only two colleges in which the philosophical encyclopaedia is at all adequately represented.

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## BOTANICAL INSTRUCTION IN THIS COUNTRY.

By a slow evolutionary process, botanical instruction appears to be undergoing a radical change in the United States, which concerns both its nature and methods. Whereas only a few years ago botany, as a college study, dealt chiefly with the flowering plants and vascular cryptogams, its scope has broadened, even in the limited undergraduate curriculum, so that the graduate of to-day is supposed to have been taught more or less about each of the principal groups of plants, from the lowest to the highest, if he has studied botany at all. With this change has come an earnest effort to make his knowledge a working-knowledge, obtained in the laboratory so far as essentials are concerned, and merely rounded out in the lecture-room. That Harvard university should be prominent in planning and introducing these changes is not surprising, for nowhere has botanical research and instruction been so favored in the possession of the necessary means and of talented leaders in different branches of the growing subject.

A good library and herbarium form an admirable basis for much systematic work and for a certain class of instruction, but they must needs be supplemented by a garden and museum if the latter is to meet the modern requirements. Botanical gardens are established either to aid in the introduction of valuable economic plants, or as